

**HYDROGEOLOGICAL
INVESTIGATION
OF THE
DOANE LAKE AREA
PORTLAND, OREGON**

VOLUME I

**Report Plus
Appendices A, B, and C**

PREPARED FOR
The Industrial Group
Doane Lake Area

PREPARED BY



**GERAGHTY
& MILLER, INC.**
Environmental Services

FEBRUARY 1991

HALPROD-0001


HYDROGEOLOGICAL INVESTIGATION
OF THE
DOANE LAKE AREA, PORTLAND, OREGON

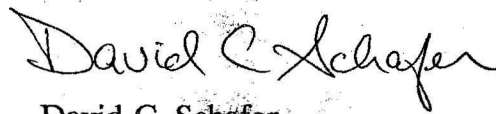
February 22, 1991


Geraghty & Miller, Inc. appreciates the opportunity to work for the Doane Lake Industrial Group at the Doane Lake Area in Portland, Oregon. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

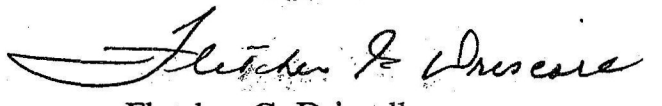
Respectfully submitted,

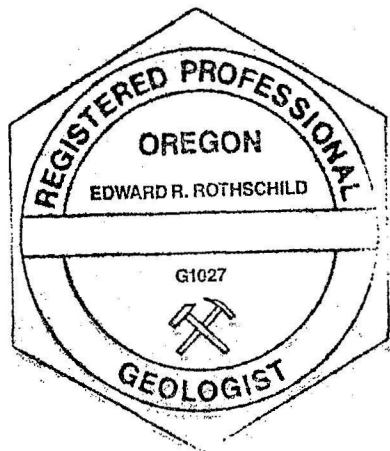
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OF THE
DOANE LAKE AREA, PORTLAND, OREGON**

Volume I

February 22, 1991

Prepared for

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HALPROD-0001612

**HYDROGEOLOGICAL INVESTIGATION
OF THE
DOANE LAKE AREA, PORTLAND, OREGON**

EXECUTIVE SUMMARY

The Doane Lake area is located in the western industrial district of Portland, Oregon. Industry has been active in the area since the early 1900s. Activities to evaluate hydrogeological conditions in the area were initiated by a group of industries and landholders (the Doane Lake Industrial Group) upon entering into an Order on Consent with the Oregon Department of Environmental Quality (DEQ). An approved scope of work and work plan was prepared based upon an earlier study (Phase I Hydrogeological Investigation) conducted on behalf of the Group. This report presents the results of implementing the work plan. The objectives of this investigation were to evaluate hydrogeologic conditions in the vicinity of the Gould Superfund site, located in the Doane Lake area; to calculate the zone of influence of potential Gould remedial activities, which have yet to be determined to be necessary; and to assess the impact that ground-water quality in the Doane Lake area could have on potential Gould site remedies.

Activities completed as part of the hydrogeological investigation included the installation of 11 new wells at the site as well as a survey of these wells and the already existing extensive monitoring well network; the collection of ground- and surface-water level measurements; aquifer testing; water sample collection; data analysis; and report preparation. Field activities were initiated and completed during the 1990 field season; any variations from the work plan were carried out with the approval of DEQ to assure the objectives of the study were being met.

The area of investigation is bound by the Tualatin Mountains and Willamette River on two sides and by industrial properties on the other two sides. Within the area of investigation are surface-water bodies referred to as the Doane Lake remnants. The

area has been extensively filled with dredged river sediment and industrial materials. The lake remnants are the remaining portion of a once marshy, backwater area.

The Doane Lake area is underlain by four major hydrostratigraphic units: fill, sand, silt, and basalt. These units are of generally low permeability, with the exception of some areas of fill. The silt unit is the most extensive near-surface unit and is the least permeable of the units investigated. Ground water in the area generally flows to the north-northeast towards the Willamette River. Deviations from this flow pattern occur in shallow horizons adjacent to the lake remnants which appear to serve as recharge zones to the ground-water flow system. Available data indicate the area is part of a closed, local-flow system, with the Willamette River and Tualatin Mountains serving as hydrologic boundaries, i.e., recharge to the area occurs near the base of the mountains and ground water appears to discharge into the river. Ground-water flow beneath the river is unlikely.

To evaluate the potential zone of influence of potential remedial measures at the Gould site, aquifer hydraulics were evaluated and a generalized pumping scenario was assumed. In particular, the results of the pumping test performed as part of this investigation were used in conjunction with an assumption that remedial pumping would occur in the area of battery casing debris located on the Gould site. The capture zone analysis indicates that if pumping associated with any remedial activities occurs, water is likely to be drawn from only three or four properties adjacent to the Gould site. Pumping could also capture ground water being recharged from the East Doane Lake remnant. Several properties surround and may contribute surface-water runoff into the lake remnant. The capture zone analysis performed is greatly simplified, but representative of likely pumping conditions. The actual capture zone could vary with the actual configuration and pumping rates of wells and if hydraulic barriers are used to limit the extent of capture.